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An Analysis of Books Used by Computer Science and Engineering Students at Siddhartha Engineering College

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Introduction

In developing countries like India, circulation and loan of documents from a library collection is a vital medium for the dissemination of information and knowledge. Circulation of books for home reading maximizes the use of library resources, and helps meet user needs for research, publication, and instructional activities. Circulation data is one way of assessing a library. Since circulation of printed material remains important in Indian, it is appropriate to analyze circulation as a way of guiding the acquisition of books. The growth of information in terms of quality and quantity, the many subjects of interest to users, increasing costs, and limited fiscal resources force librarians to use data for making rational decisions. The present investigation uses circulation records to study the books borrowed from the college library of Siddhartha Engineering College by computer science and engineering students.

V R Siddhartha Engineering College (VRSEC) is the first private engineering college in the state of Andhra Pradesh, established in 1977, sponsored by Siddhartha Academy of General and Technical Education, Vijayawada, Andhra Pradesh, India. The college has eight undergraduate and four postgraduate courses in engineering and computer science. The college library has 56,500 volumes, 150 national and international journals, DELNET and APSONET databases, Internet and Intranet facilities.

Objectives

The following are the objectives of the present study:

- To find the number of books used by final-year computer science and engineering students
- To determine the authorship patterns, range of publication dates, and countries of publication of circulated books
- To prepare a ranked list of most frequently used books
- To prepare a ranked list of publishers

Hypotheses

The following hypotheses have been formulated for testing

- Most books used have a single author and are in the field of computer science or engineering.
- Female students use more books than male students.
- All students prefer the newest books.
- Students use Indian publications more than those from other countries

Scope and limitation

The present study examines books borrowed by final-year computer science and engineering students of Siddhartha Engineering College Library

, Vijayawada during 2004-2005. It is also limited to borrowed books. Data pertaining to the use of textbooks and reference books within the library is excluded from the study.

Methodology

Undergraduate students in eight areas of engineering and postgraduate students in four areas, as well as teaching and non teaching staff, have access to the library. The investigator selected only final-year undergraduate students of computer science and engineering for this study. The total sample consists of 132 final-year computer science and engineering students, and used the borrowing data of 100 students, based on the entries in their personal borrowing books. Out of these 100 students, 65 are male and 35 are female.

Analysis

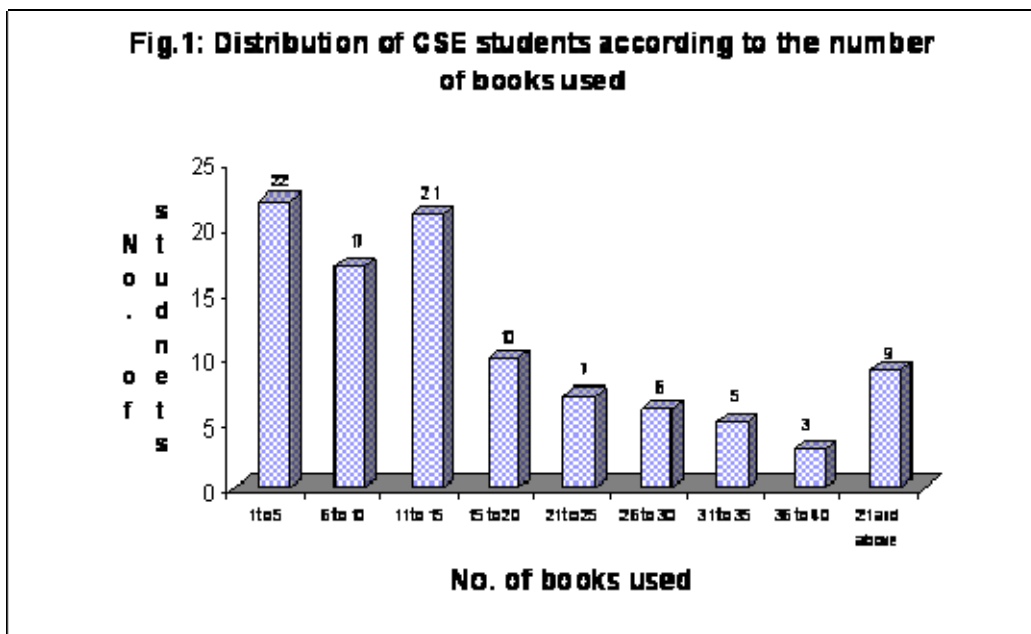
Table 1. Books used by gender

Gender	Number of Students	Number of books borrowed	Percentage	Average
Male	65	1442	78.24	22
Female	35	401	21.76	12
Total	100	1843	100.00	18

Most books (78.24%) were borrowed by male students, with the remaining books (21.76%) borrowed by female students. An average of 18 books was borrowed per student per year.

Table 2. Distribution by number of books used

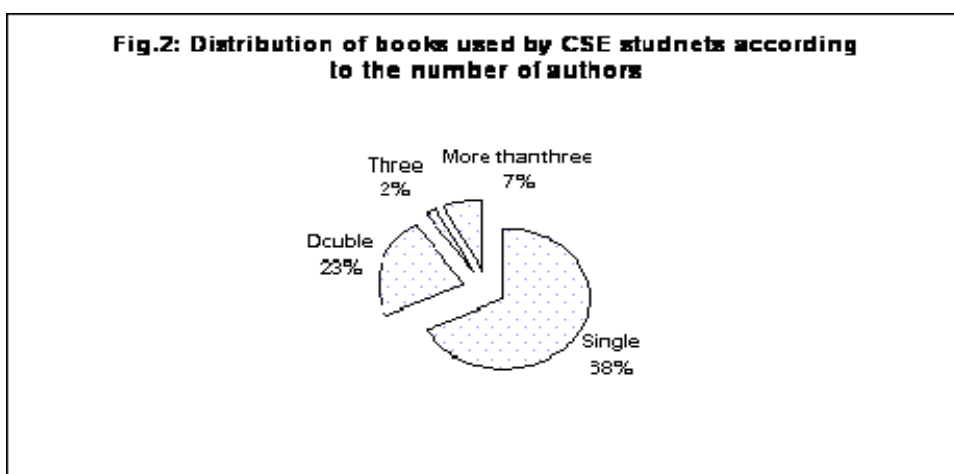
S.No	Number of books	Students	
		Number	Percentage
1	1 - 5	22	22.00
2	6 - 10	17	17.00
3	11 - 15	21	21.00
4	16 - 20	10	10.00
5	21 - 25	7	7.00
6	26 - 30	6	6.00
7	31 - 35	5	5.00
8	36 - 40	3	3.00
9	41 and above	9	9.00
	Total	100	100.00



Seventy percent of students have used twenty or fewer books.

Table 3. Distribution of books by number of authors

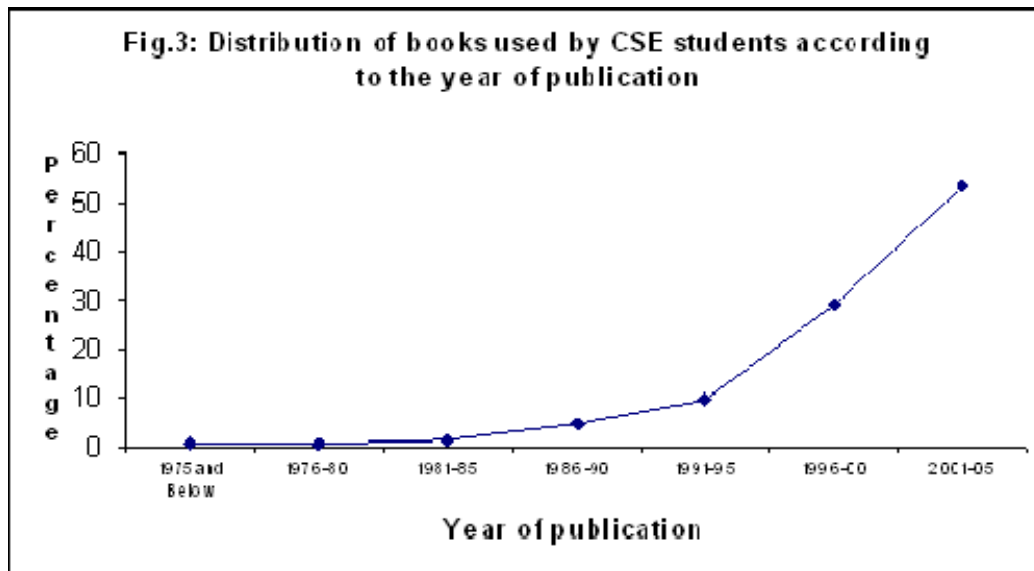
S.No	Author	Books	
		Number	Percentage
1	Single	1251	67.88
2	Double	422	22.90
3	Three	39	2.12
4	More than three	131	7.10
	Total	1843	100.00



A large majority of the books used by computer science and engineering students were written by a single author.

Table 4. Distribution of books by year of publication

S.No	Year	Books	
		Number	Percentage
1	Below 1975	13	0.71
2	1976 - 1980	14	0.76
3	1981 - 1985	29	1.57
4	1986 - 1990	89	4.83
5	1991 - 1995	182	9.87
6	1996 - 2000	535	29.03
7	2001 - 2005	981	53.23
	Total	1843	100.00



More than half the books used were published between 2001 and 2005, and nearly 80 percent during the most recent ten years.

Table 5. Distribution of books by country of publication

S.No	Country	Books		Cumulative	
		Number	Percentage	Number	Percentage
1	India	1436	77.92	1436	77.92
2	U.S.A	195	10.58	1631	88.50
3	U.K	111	6.07	1742	94.52
4	Singapore	34	1.84	1776	96.36
5	Japan	26	1.41	1802	97.77
6	Russia	21	1.14	1823	98.91
7	New Zealand	9	0.49	1832	99.40
8	Australia	5	0.27	1837	99.67
9	Netherlands	4	0.22	1841	99.89
10	Germany	2	0.11	1843	100.00

More than three quarters of the books used were published in India.

Table 6. Distribution of books by type of publisher

S.No	Publisher	Books	
		Number	Percentage
1	Indian	1436	77.92
2	Foreign	407	22.08
	Total	1843	100.00

Going along with the results displayed in the previous table, Table 6 shows that more than three quarters of the books used were published by Indian publishing companies.

Table 7. Distribution of books by ranked list of publishers

S.Number	Name of the Publisher	Rank	Used		Cumulative	
			Number	%	Number	%
1	Pearson Education Asia	01	429	23.28	429	23.28
2	Prentice Hall of India Private Limited	02	267	14.49	696	37.77
3	Tata McGraw Hill Publishing Company Limited	03	242	13.13	938	50.90
4	Mc Graw Hill International Book Company	04	177	9.60	1115	60.50
5	BPB Publications	05	78	4.23	1193	64.73
6	Narosa Publishing House	06	68	3.69	1261	68.42
7	John Wiley and Sons Incorporation	07	58	3.15	1319	71.57
8	Galgotia Publications Private Limited	08	45	2.44	1364	74.01
9	Vikas Publishing House	09	42	2.28	1406	76.29
10	Shorff Publishers and Distributors Private Limited	10	38	2.06	1444	78.35
11	Penguin Books	11	29	1.57	1473	79.92
12	Techmedia	12	25	1.36	1498	81.28
13	Sun Microsystems	13	25	1.36	1523	82.64
14	Wiley Eastern/New Age International Private Limited Publishers	14	23	1.25	1546	83.89
15	Macmillan Publishing Company	15	13	0.71	1559	84.60
16	SciTech Publication (India) Private Limited	15	13	0.71	1572	85.31
17	Envisec	16	12	0.65	1584	85.96

18	Harpper Collins Publishers	16	12	0.65	1596	86.61
19	Dhanpat Rai	17	11	0.60	1607	87.21
20	IDG Books World Wide	17	11	0.60	1618	87.81
21	Cambridge University Press	18	10	0.54	1628	88.35
22	Khanna Publishers	19	9	0.49	1637	88.84
23	Wrox Press Limited	20	8	0.43	1645	89.27
24	S.Chand and Company Limited	20	8	0.43	1653	89.70
25	Arrow Publications	20	8	0.43	1661	90.13
26	LMC	21	7	0.38	1668	90.51
27	Prentice Hall International	21	7	0.38	1675	90.89
28	St. Martin	21	7	0.38	1682	91.27
29	Pan	22	6	0.33	1688	91.60
30	Bantam	23	5	0.27	1693	91.87
31	Kidarnath and Badarnath	23	5	0.27	1698	92.14
32	Oxford University Press	23	5	0.27	1703	92.41
38	6 publishers 4 each	24	24	1.30	1727	93.71
50	12 publishers 3 each	25	36	1.95	1763	95.66
59	9 publishers 2 each	26	18	0.98	1781	96.64
121	62 publishers 1 each	27	62	3.36	1843	100.00

Most books that were used were from Pearson Education Asia, followed by Prentice Hall of India (14.49%), Tata McGraw Hill (13.13%), McGraw Hill International (9.60%), and BPB Publications (4.23%)

Table 8. Ranked List of Most Frequently Used Books

S.Number	Title	Rank	Used		Cumulative	
			Number	%	Number	%
1	<i>Principles of compiler design/A.V. Aho and J.D. Ullman</i>	01	58	3.15	58	3.15
2	<i>Computer networks/A.S. Tanenbaum</i>	02	49	2.66	107	5.81
3	<i>Software engineering: A practitioner's approach/R.S. Pressman</i>	03	41	2.22	148	8.03
4	<i>Object oriented systems development/Ali Bahrami</i>	04	36	1.95	184	9.98
5	<i>Operating systems concepts/ A. Silberschatz</i>	05	31	1.68	215	11.66
6	<i>Distributed systems: Principles and paradigms/A.S. Tanenbaum</i>	06	29	1.57	244	13.23
7	<i>Internet world wide web: How to program/H.M. Deitel</i>	07	26	1.41	270	14.64
8	<i>Visual basic 6: The complete reference/Noel Jerke</i>	08	24	1.30	294	15.94
9	<i>Principles of distributed database systems/ T.M. Ozsu and P. Valduriez</i>	09	23	1.25	317	17.19
10	<i>Fundamentals of database systems/R. Elmasri and S.B. Navathe</i>	10	19	1.03	336	18.22
11	<i>Database system concepts/A. Silberschatz, H.F. Korth and S. Sudarshan</i>	10	19	1.03	355	19.25
12	<i>Compilers principles techniques and tools/Alfred V. Aho</i>	11	18	0.98	373	20.23
13	<i>An embedded software primer/David E. Simon</i>	12	17	0.92	390	21.15
14	<i>Advanced computer architecture: Parallelism, Scalability, Programmability/ Kai Hwang</i>	13	16	0.87	406	22.02
15	<i>Java programming languages/ Ken Arnold and James Gosling</i>	13	16	0.87	422	22.89
16	<i>C how to program: introducing C++ and JAVA/ H.M. Deitel and P.J. Deitel</i>	14	14	0.76	436	23.65
17	<i>HTML black book/Steven Hozner</i>	14	14	0.76	450	24.41
18	<i>Data communication, computer networks and open systems/Fred Halsall</i>	15	13	0.71	463	25.12
19	<i>Embedded systems design: A unified hardware/software introduction/F. Vahid</i>	15	13	0.71	476	25.83
20	<i>Modern operating systems/ A.S. Tanenbaum</i>	15	13	0.71	489	26.54
21	<i>Concepts of programming languages/R.W. Sebesta</i>	16	12	0.65	501	27.19

22	Database management systems/ Alexis Leon and Mathews Leon	16	12	0.65	513	27.84
23	Microsoft visual basic 6: Design, Specification and Objects/B.S. Hollis	16	12	0.65	525	28.49
24	Object oriented programming using C++/B. Chandra	16	12	0.65	537	29.14
25	Artificial intelligence/ Elaine Rich and Kerin Knight	17	11	0.60	548	29.74
26	C++ how to program/ Deitel and Deitel	17	11	0.60	559	30.34
27	Let us C++/Yashwant Kanetkar	17	11	0.60	570	30.94
28	Microprocessor architecture programming and applications with the 8085/8080 A//Rames S. Gaonkar	17	11	0.60	581	31.54
29	C programming FAQ's frequently asked questions/ Steve Summit	18	10	0.54	591	32.08
30	Data and computer communications/William Stallings	18	10	0.54	601	32.62
31	Placement and personality development/ KVSG Murali Krishna	18	10	0.54	611	33.16
32	Data structures using C and C++/ Y. Langsam	19	9	0.49	620	33.65
33	Java technology for structured programmers/Sun Microsystems	19	9	0.49	629	34.14
34	Programming with visual basic 6.0/ Mohammed Azam	19	9	0.49	638	34.63
35	An introduction to database systems/C.J. Date	20	8	0.43	646	35.06
36	Database systems concepts/A. Silberschatz	20	8	0.43	654	35.49
37	Internet working with TCP/IP Vol.1: Principles, Protocols, and Architecture/Douglas E.Comer	20	8	0.43	662	35.92
38	Object oriented analysis and design/Grady Booch	20	8	0.43	670	36.35
39	Operating systems design and implementation/A.S. Tanenbaum	20	8	0.43	678	36.78
40	Operations research/S.D. Sarma	20	8	0.43	686	37.21
41	System software: An introduction to system programming/Leland L. Beck	20	8	0.43	694	37.64
42	COM/DCOM primer plus/Chris Corry	21	7	0.38	701	38.02
43	Computer graphics: A programming approach/S. Harington	21	7	0.38	708	38.40
44	Computer system architecture/M. Morris Mano	21	7	0.38	715	38.78
45	Data communications and networking/B. A. Forouzan	21	7	0.38	722	39.16
46	Data structures and algorithm analysis in C/Mark Allen Weiss	21	7	0.38	729	39.54
47	Mastering C++/K.R. Venugopal	21	7	0.38	736	39.92
48	Programming with C++/D. Ravichandran	21	7	0.38	743	40.30
49	Teach yourself Microsoft visual basic.net 2003 in 21 days/Steven Holzmer	21	7	0.38	750	40.68
50	The C++ programming languages/B. Stroustrup	21	7	0.38	757	41.06
51	Data ware housing in the real world/Sam Anahory	22	6	0.33	763	41.39
52	Exploring C/Yashawant Kanetkar	22	6	0.33	769	41.72
53	Modern power system analysis/I.J. Nagarath	22	6	0.33	775	42.05
54	Power electronics/P.S. Bimbhra	22	6	0.33	781	42.38
55	The C programming languages/Brian W. Kernigham	22	6	0.33	787	42.71
56	The java FAQ/J. Kanerva	22	6	0.33	793	43.04
78	22 books 5 each	23	110	5.97	903	49.01
115	37 books 4 each	24	148	8.03	1051	57.04
160	45 books 3 each	25	135	7.33	1186	64.37
276	116 books 2 each	26	232	12.59	1418	76.96
701	425 books 1 each	27	425	23.06	1843	100.00

701 titles and 1,843 volumes were used during the year. *Principles of Compiler Design*, by Alfred V. Aho and Jeffery D. Ullman was used by more students than any other. The top five titles account for 11.55 percent of total borrowing and the 50 titles listed in the table account for 40.68 percent.

Conclusions and Recommendations

There are some conclusions that can be drawn from this data, which could be used to guide acquisition of new material. Students used an average of 18 books during their final year of study. Males

used more than females on average (22 vs. 12). Most books had a single author and were published during the ten years preceding the study. In addition, most books were published in India, with Pearson Education Asia being the leading publisher.

Suggestions for Further Research

Studies of a similar nature could be carried out on the use of books by other departments of the college, and at other college Libraries in India. This would add authenticity and a basis for comparative analysis before drawing generalizations and conclusions for optimal use of library resources. Studies could also be undertaken on the use of books by faculty members of this and other college libraries in India.